merchant & gould

CLAIMS

Sub A7

1. An electronic ballast for a high intensity discharge lamp, comprising: an inverter circuit and a resonant circuit, and wherein at least one ignition capacitor is provided between the resonant circuit and the lamp.

C1, L1, L2, C2

C2, Co

2. An electronic ballast as claimed in claim 1 wherein two ignition capacitors are provided in parallel with each other, a first of said ignition capacitors being located physically proximate to said inverter circuit and said resonant circuit, and the second of said ignition capacitors being located proximate the lamp and separated from the first ignition capacitor by a cable.

3. An electronic ballast as claimed in claim 1 wherein said inverter circuit comprises two switches and wherein means are provided for varying the switching frequency of said inverter circuit.

4. An electronic ballast as claimed in claim 3 wherein said inverter circuit is operated at a low frequency during an ignition step and at a high frequency during steady state operation.

5. An electronic ballast as claimed in claim 3 wherein means are provided for regulating the lamp power during steady state operation by varying the switching frequency of the inverter.

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6. An electronic ballast as claimed in claim 5 wherein means are provided for monitoring lamp power by monitoring a dc link current, and wherein said switching frequency of said inverter is varied in response to an output from a current controller.

7. An electronic ballast as claimed in claim 1 wherein means are provided whereby in the event of ignition failure the ballast is disabled and a further attempt to ignite the lamp is made after a preset time interval.

8. An electronic ballast as claimed in claim 7 wherein success or failure of the ignition is detected by comparing the lamp current with a reference current, and wherein in the event of ignition succeeding and the lamp current being higher than the reference current, the ballast is then operated at a high switching frequency.

9. An electronic ballast as claimed in claim 7 wherein when an attempt to ignite the lamp is made an ignition voltage is generated for a relatively short duration only such that even if repeated attempts are made to ignite the lamp the rms lamp voltage remains below a preset value determined by safety considerations.

10. An electronic ballast as claimed in claim 1 including means for detecting a short-circuit or open circuit condition at said lamp.

11. An electronic ballast as claimed in claim 10 wherein said short-circuit and open circuit detecting means comprises means for detecting when a dc link current falls below a reference value.

12. An electronic ballast as claimed in claim 10 wherein said short-circuit and open circuit detecting means is not activated during a lamp ignition step.

13. An electronic ballast as claimed in claim 1 further comprising means for maintaining the lamp current at a level higher than its steady state level for a predetermined period of time following ignition to accelerate warming of the lamp plasma.

14. An electronic ballast with a nominally constant dc link voltage for a high intensity discharge lamp, comprising: an inverter circuit, a resonant circuit, and means for detecting a short circuit or open circuit condition at said lamp.

15. An electronic ballast as claimed in claim 14 wherein said short circuit or open circuit detecting means comprises means for detecting when a dc link current falls below a reference value.

16. An electronic ballast as claimed in claim 14 wherein delay means are provided whereby said short circuit or open circuit detecting means is not activated until a predetermined time after ignition of said lamp.

17. An electronic ballast for a high intensity discharge lamp comprising an inverter circuit and a resonant circuit, wherein the switching frequency of the inverter circuit may be varied for regulating lamp power in response to a monitored dc link current.

18. An electronic ballast for a high intensity discharge lamp, comprising: an inverter circuit, a resonant circuit, means for disabling the ballast in the event that the lamp

fails to ignite in a start-up process, and means for making a further attempt to ignite the lamp after a predetermined interval.

19. An electronic ballast as claimed in claim 18 wherein success or failure of the ignition is detected by comparing the lamp current with a reference current, and wherein in the event of ignition succeeding and the lamp current being higher than the reference current, the ballast is then operated at a high switching frequency.

20. An electronic ballast as claimed in claim 18 wherein when an attempt to ignite the lamp is made an ignition voltage is generated for a relatively short duration only such that even if repeated attempts are made to ignite the lamp the rms lamp voltage remains below a preset level determined by safety considerations.